MESSRS. W. HEFFER AND SONS, LTD., Cambridge, have published a useful catalogue (No. 166) of scientific books, periodicals, and publications of scientific societies, which will be sent upon written application. It is conveniently classified under the headings of agriculture and husbandry· horses and horsemanship; botany; chemistry; geology, mineralogy, and palæontology; zoology, biology, and Nature-study; physiology, anatomy, and medicine (sub-section, dentistry); mathematics, physics, and engineering; and astronomy. It includes a selection from the library of Dr. L. C. Miall, and works on conchology and malacology, mainly from the library of the late Prof. H. M. Gwatkin.

SOTHERAN'S "Price Current of Literature" (H. Sotheran and Co., 140 Strand, W.C.2), No. 769, has just appeared under the appropriate title of "The History of Civilisation," seeing that it deals with works on anthropology, folk-lore, archæology, and sociology. It is a valuable catalogue, classified under the headings of general works, early and primitive man, and the dawn of civilisation—(*a*) Oriental and (*b*) Occidental—and contains particulars of the library of the late Sir Laurence Gomme.

A NEW and revised edition of vol. i. of Dr. G. McCall Theal's "History and Ethnography of Africa South of the Zambesi" is announced for immediate publication by Messrs. George Allen and Unwin, Ltd. The work covers the period from the settlement of the Portuguese at Sofala in September, 1505, to the conquest of Cape Colony by the British in September, 1795.

A CATALOGUE (No. 376) of books on architecture, art, archæology, etc., has just been issued by Mr. F. Edwards, 83 High Street, Marylebone, W.1.

OUR ASTRONOMICAL COLUMN.

COMET 1916*b* (WOLF).—The following is a continuation of Messrs. Crawfurd and Alter's ephemeris, of this comet for Greenwich midnight, as given in Lick Obs. Bulletin, No. 295:—

1917	R.A.			Decl.			Log Δ	Brightness
	h.	m.	s.	°	′	″		
Aug. 1	23	29	14	+22	10	13	0·0088	2·68
3		30	48	21	44	21	0·0065	
5		32	15	21	16	23	0·0043	2·68
7		33	33	20	46	20	0·0023	
9		34	44	20	14	14	0·0005	2·67
11		35	48	19	40	6	9·9989	
13		36	44	19	4	0	9·9976	2·65
15		37	32	18	25	58	9·9965	
17		38	14	17	46	5	9·9957	2·61
19		38	49	17	4	26	9·9953	
21		39	18	16	21	8	9·9951	2·55
23		39	41	15	36	17	9·9953	
25		39	58	14	50	2	9·9959	2·48
27		40	10	14	2	31	9·9968	
29		40	18	13	13	55	9·9981	2·39
31		40	22	12	24	23	9·9998	

The unit of brightness is that on April 21. An ephemeris by Dr. Kobold (*Ast. Nach.*, No. 4892) gives the magnitude of the comet during early August as 10·0. The comet will be in opposition on September 17.

VARIABLE PROPER MOTION OF δ CASSIOPEIÆ.—An investigation of the Pulkowa observations of the zenith star δ Cassiopeiæ has been made by L. Courvoisier in relation to Guthnick's discovery that this star is an eclipsing variable having a period of about 2·1 years (*Ast. Nach.*, 4891). It results from the discussion that there is a variation in the proper motion arising from the binary character of the star, and that the amplitude in declination of the two-yearly oscillation amounts to 0·04″ ± 0·01″. The correction to the assumed value for the aberration constant, 20·47″, is +0·01″, and the deduced parallax of the star is +0·11″.

THE NEEDS OF ASTRONOMY.—The Astronomy Committee of the National Research Council of the United States has issued an interesting report on the most pressing needs of astronomy. The best immediate use of a fund for astronomical research is considered to be the provision of increased facilities for observations in the southern hemisphere, and the erection of large reflectors in both hemispheres for the extension of nearly every research to very faint stars. The provision of more assistants to aid in carrying on extensive routine observations would also secure a relatively great increase in the output of existing institutions. The twenty examples of work of a more or less routine character which are specified include determinations of the positions of all stars of ninth magnitude and brighter, proper motions of all stars down to magnitude 7·5, and parallaxes of all stars down to magnitude 6 and of specially selected fainter stars. Photometric observations of all stars to ninth magnitude, determinations of the radial velocities of all stars of magnitude 6 and brighter, and the more systematic observation of double and variable stars also form part of the suggested programme. One important outcome of such routine work would be the publication of a catalogue of all stars down to magnitude 6·5, giving for each the approximate position, proper motion, radial velocity, magnitude, spectrum, colour index, etc., which, it is suggested, should be brought up to date every three years. The possible services that astronomers can render in the war are under consideration.

THE TRANSLITERATION OF RUSSIAN.

THE transliteration of Oriental and other characters into Roman script naturally varies with the genius of the language into which the transliteration is made. The diversity of the resulting metamorphoses is bewildering, and any attempt to evolve cosmos out of this chaos should be welcome. As regards Russian names, with which we are immediately concerned, such an attempt has been made, for bibliographical purposes, by the Russians themselves, under the auspices of no less an authority than the Academy of Sciences of Petrograd.

To give some idea of the importance of this system of transliteration, the use of which has not yet extended beyond scientific circles, a brief relation of the circumstances which led to its inception may not be out of place. The beginning of this century witnessed the birth of a great scientific bibliography, published by the Royal Society of London under the title of "The International Catalogue of Scientific Literature." It is, in effect, a continuation of the Royal Society's "Catalogue of Scientific Papers," which is now in course of completion up to the close of last century. It is carried on, as its name implies, by international co-operation, and it is supported by almost the whole of the civilised world. One of its distinctive features being that it records the work of scientific investigators in their original language, the alphabetical arrangement of authors' names necessitated the adoption of a system of transliteration for each language which does not employ Roman script. The Petrograd Academy of Sciences thereupon applied itself to the problem of Russian names, and referred the matter to a special committee consisting of H. G. Zaleman (chairman), F. E. Korš, E. I. Lamanskij, N. A. Menšutkin, and A. A. Šachmatov. The result of its

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deliberations was the elaboration of a system of which the underlying principle can be explained in a very few words. It is based on the phonetic value of the Bohemian alphabet. Bohemian being a Slav language which employs Roman script, the materials for a consistent and intelligible scheme of transliteration lie ready to hand. This alphabet with its diacritic signs enables us in most cases to represent one Russian letter by one Roman letter, and this in itself constitutes an improvement on the systems previously in vogue, notably on the Continent of Europe, most of which are vitiated by imperfect phonetic apprehension.

The following is a summary of the report of the committee:—

"The basis of the transcription is the phonetic value of Roman letters in the Bohemian alphabet:—

а б в г д ж з і, и й к л м н о п р с т у ф
a b v g d ž z i, j k l m n o p r s t u f

х ц ч ш щ ы ѣ э ѳ ѵ
ch c č š šč y ě e f i

я, ю, at the beginning of a syllable, and consequently also after ъ, ь, which are omitted, are written ja, ju, but, after consonants with which they form one syllable, ĭa, ĭu. In like manner e and ѣ after ь, ъ are written je, jě, but after consonants simply e, ě. At the beginning of proper names the simple e should be used, *e.g.* Egorov, not Jegorov. After ь, i should be replaced by ji.

"The letter ъ is not transcribed, but ь at the end of a word and before consonants is written ĭ, *e.g.* дать = datĭ, конь = konĭ, большой = bolísoj. The accented e pronounced jo is represented, as in Russian, by ë, but in the case of proper names the diæresis should not be used unless the author himself uses it, *e.g.* Чернышевъ = Černyšev, Ёвшинъ = Ëvšin, Берёзинъ = Berezin."

To attempt by any system of spelling to reproduce the well-nigh infinite inflexions of the human voice is to attempt the impossible, but there is one important point in the above scheme which, whether by inadvertence or design, seems to have been passed over. No mention is made of the genitive termination го, where г invariably has the sound of v. Добраго were better transcribed Dobravo than Dobrago.

It may be objected that such a system is not suited to English-speaking countries, that the introduction of the Bohemian alphabet further complicates matters. The reply is that it was devised, not with special reference to English or for the purposes of teaching, but primarily to meet the needs of international bibliography. It should be mentioned that it has been adopted by the Royal Society in its "Catalogue of Scientific Papers" and by "Minerva: Jahrbuch der gelehrten Welt," published at Strassburg, and that it is obligatory for all work in connection with the International Catalogue of Scientific Literature. It seems opportune at the present moment to direct attention to the existence of a system of transliteration which it is hoped will in time supersede all others for bibliographical purposes, and which bears the imprimatur of the Russian authorities, who earnestly desire its extended adoption.

EDWARD FOORD.

SCIENCE IN EDUCATION AND ADMINISTRATION.

THE subjoined Memorandum has been approved by the Senate of the University of London and transmitted to the Treasury, the Board of Education, the Civil Service Commission, the Committee on Science in the Educational System of Great Britain appointed by the Government, and the Royal Society:—

1. Primary and secondary education should be directed towards making active and useful citizens, and should include the development of mind and character and instruction in the fundamental branches of knowledge.

Literary, linguistic, mathematical, and scientific studies should be regarded as fundamental branches of knowledge, and each pupil should receive some instruction in all these branches. In the case of pupils who pursue their education beyond the age of sixteen, these subjects should as a rule be continued, and public and secondary schools should not undertake specialised training in professional subjects.

Opportunities for learning Latin and Greek should be given in one or more schools in every educational area.

While it is not desirable that it should be compulsory on all pupils, some form of artistic and manual training is to be regarded as of very high importance.

2. The teaching of natural science (including physics and chemistry) should be compulsory in all secondary schools, both boys' and girls' schools.

3. All secondary schools retaining pupils beyond the age of sixteen should be capable of providing instruction in the science subjects of the entrance examinations of the universities up to the standard required for these examinations.

4. Special technical day schools, in accordance with local needs, should be established in all industrial centres for boys and girls between thirteen and sixteen years of age who wish to enter the technical (including engineering, chemical, and artistic) industries at the age of sixteen.

5. In order to secure for science teaching the position to which it is entitled, and which for the benefit of the nation it ought to occupy, the schemes under which the great public schools are administered should in each case contain provisions to the effect:—

(*a*) That the governing body shall include a substantial number of representatives of the learned and scientific societies, and

(*b*) That members of the governing body shall not hold office for life.

Without such provisions, it is probable that men distinguished by mathematical or scientific attainments will continue to be at a disadvantage in applying for appointment to headmasterships of public schools.

Greek should not be a compulsory subject for entrance scholarships to these schools; and adequate facilities (including equipment) for learning science should be available for, and accessible to, all their pupils.

6. The number of branches in which a first university degree can be taken should not be unduly multiplied, but students who have taken a first degree in science should be encouraged by the institution of higher [M.Sc.] degrees, especially in technical branches, to specialise in particular branches of science, or in their applications to industry. The preparation for such degrees should include some training in the methods of research.

7. The present arrangement for the selection of first division clerks in the Civil Service should be modified so that on every occasion an adequate proportion of those appointed must have had mathematical or scientific training.

8. In all selections for the higher administrative posts for the Government Departments the work of which is of a scientific or technical character the official selected ought to have received such a scientific training as will fit him to understand the character of the work for the organisation of which he will be responsible.

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